B. The widespread use of non-Microsoft Internet browsers threatened to erode the applications barrier to entry and Microsoft's monopoly power

1. The nature of the browser threat

53. Internet browsers, including Netscape Navigator, possess three key middleware characteristics that make them threats to Microsoft's operating system monopoly in ways that traditional operating systems, without middleware assistance, are not.

53.1. First, by contrast to traditional operating system competitors to Windows, Internet browsers can gain (and have gained) widespread usage based on their value as a complement to Windows, without having first to compete against Windows as a substitute.

i. Dr. Warren-Boulton testified: "Although a PC operating system cannot successfully compete against Microsoft's operating systems without first overcoming formidable barriers to entry, the situation is different for a product (*e.g.*, browsers or Java technology) that is both initially a complement from an end user perspective and a potential substitute for the Windows 95/98 platform to which applications developers can write. Because applications written to such a complement are compatible with Windows, their developers can sell their applications to users of the Windows operating system. Eventually, a sufficient number of such applications may become available to support an alternative platform to Windows. " Warren-Boulton Dir. ¶ 65; see also Warren-Boulton, 12/1/98am, at 67:19 - 68:8.

53.1.1. With the advent of widespread popular use of the Internet in 1994-95, browser products became a widely-used complement to Windows. Netscape Navigator emerged as the browser market leader and quickly attracted a large installed base of users.

i. As Netscape CEO James Barksdale testified: "The commercial release of Netscape Navigator 1.0 occurred on December 15, 1994. By the end of the second quarter of 1995, Netscape had collected over $10 million in revenue generated by the browser alone. By the end of 1995, Netscape had collected approximately $45 million in revenue from browsers," (Barksdale Dir. ¶ 18) had "over 70 percent market share

for Internet clients and had distributed 15 million browsers around the world through a variety of channels including ISPs, OEMs, and resellers as well as over the Internet." Barksdale Dir. ¶ 66.

ii. James Clark, founder and former Chairman of Netscape, testified that Netscape attained an "85 percent market share." Clark Dep., 7/22/98, at 39:3-9 (DX 2562).

53.1.2. Netscape enjoyed early success with its innovative browser.

i. Barksdale testified that Netscape Navigator "hid the technological complexities of the Internet from the end user. Its introduction into the marketplace had a profound effect; the product was an immediate and huge success precisely because of its ease of use and its ability to bring so much new multimedia information to the consumer." Barksdale Dir. ¶ 12; see also Schmalensee, 6/23/99pm, at 47:23 - 48:3.

ii. In a presentation in April 1996, Microsoft Senior Vice-President Brad Silverberg made clear that Netscape and Sun "are smart, aggressive, and have a big lead. This is not Novell or IBM we are competing with." GX 40 (emphasis in original).

iii. Indeed, in May 1996 Mr. Gates had made clear to Microsoft's top executives his impressions of Netscape as a strong competitor: "During this Thinkweek I had a chance to play with a number of Netscape products. This reinforced the impression that I think all of us share that Netscape is quite an impressive competitor. They are moving at full speed." GX 41, at MS6 6012952.

53.2. Second, because Internet browser products, including Netscape Navigator, expose APIs to which ISVs can write, Internet browsers can serve as a "platform" for other software used by consumers.

i. Gates recognized that Netscape Navigator exposed APIs:

Gates Dep., 8/27/98, at 54:4-12 (DX 2568A) (sealed); see also Gates Dep. (played 12/2/98am), at 21:25 - 22:18.

ii. As Apple's Avadis Tevanian explained: "Internet-related technologies such as browsers are important in the development of future software platforms which could operate 'on top' of different operating systems. These software platforms could be used to run various applications such as programs that display, edit, manipulate and transmit various types of content." Tevanian Dir. ¶ 45.

iii. Microsoft's James Allchin testified that middleware products such as browsers running on top of a conventional operating system can serve as a platform for other software. Allchin Dir. ¶ 35; Dertouzos Dep., 1/13/99, at 427:18 - 428:4; Slivka Dep., 1/13/99, at 712:21 - 715:6.

iv. Allchin acknowledged that browser products such as Netscape's expose "certainly hundreds, maybe thousands" of APIs to application developers without being included in any operating system. Allchin, 2/3/99pm, at 10:1; see also Maritz, 1/25/99pm, at 29:22 - 30:19 (distinguishing Netscape's browser from browser "shells" built on top of Internet Explorer in that Netscape's browser had the capability of developing into an alternative platform); GX 489, at MS6 6000311 ("Navigator/NetOne provides a new API set -- in near/medium term, Navigator provides the volume platform for ISVs & Corps to target.").

v. Barksdale testified that Netscape sought to "allow people to build applications on top of our browser using what is called the NSAPI, the Netscape Application Programmer Interface," Barksdale , 10/27/98am, at 73:11-25. As a result, "the browser is not only useful for browsing the Web but also can serve as a platform for the development of all sorts of network-centric software applications, such as online-banking software products. These network-centric applications, in essence, sit on top of the browser and take advantage of its Web-oriented functionality." Barksdale Dir. ¶ 15; see also Colburn Dir. ¶ 8; Andreessen Dep. (played 12/1/98am), at 63:22 - 66:1; Clark Dep., 7/22/98, at 44:25 - 46:16 (DX 2562); Schell Dep., 9/15/98, 103:17 - 104:22 (DX 2562).

vi. Professor Fisher testified: "Netscape's browsers contain their own set of APIs (as well as a set of Java APIs) to which applications developers can write applications. As a result, applications can be developed that will run on browsers regardless of the underlying operating system." Fisher Dir. ¶ 84; see also Warren-Boulton Dir. ¶ 69; Warren-Boulton, 11/23/98pm, at 34:12 - 35:13.

53.3. Third, Internet browsers, including Netscape Navigator, have been ported to multiple operating systems, thereby enabling application developers to write cross-platform applications using browser APIs. Applications written for the browser will run on multiple operating systems.

i. Dr. Tevanian described the importance of Internet-oriented platforms, including browsers: "Importantly, applications written for such platforms would be able to run on any computer that has the software platform, regardless of the underlying operating system." Tevanian Dir. ¶ 45.

ii. As Professor Fisher summarized: "The browsers produced by Netscape run on many different operating systems, including Windows, the Apple Macintosh operating system, and various flavors of the UNIX operating system." Fisher Dir. ¶ 83; GX 13 (listing 22 operating systems on which Netscape Navigator runs); see also Schmalensee, 6/21/99am, at 20:10 - 21:7 (explaining how the Web and the browser serve as a platform).

iii. Microsoft's Paul Maritz, among others, recognized that Netscape's browser represented an alternative platform to which ISV's may write cross-platform programs. Maritz, 1/25/99pm, at 28:7-11; see also McGeady, 11/9/98pm, at 56:4-25 (describing Maritz's comments to Intel about how Netscape's browser posed a "cross-platform threat").

iv. Andreessen testified "that because Navigator or Communicator tend to support more operating system platforms, it's easier to write a cross-platform application." Andreessen Dep., 7/15/98, at 165:11 - 166:6 (DX 2555); see also Clark Dep., at 7/22/98, 48:21 - 49:21 (DX 2562) (explaining that Netscape's objective was "to provide a computer- and operating system-independent layer for applications that were network based to be developed").

v. Dr. Warren-Boulton testified: "The issue is not Netscape as a stand-alone alternative to Windows. The issue is . . . the existence of an independent browser industry supporting cross-platform standards in encouraging a set of applications which is large enough so that someone will provide a platform." Warren-Boulton, 11/23/98am, at 80:8-13.

54. Internet browsers, in particular Netscape Navigator, thus posed a threat to Microsoft's

operating system monopoly because they threatened to reduce the applications barrier to entry; in the words of Bill Gates, non-Microsoft browsers threatened to "commoditize" Windows.

i. Bill Gates, "The Internet Tidal Wave," May 26, 1995. GX 20, at MS98 01128763.

ii. Barksdale summarized the threat posed by Netscape to Microsoft's Windows monopoly: "These innovations arising from the development of browser technology, particularly Navigator, were eventually noticed at Microsoft. The possibility of a vast library of applications written in Java or other OS-neutral languages coupled with independent user interfaces and platforms, such as those provided by Navigator, posed a serious threat to the Windows monopoly." Barksdale Dir. ¶ 85.

iii. As Barksdale pointed out, given the APIs, whether extensive or limited, exposed by Netscape Navigator, the "big threat" to Microsoft "would be that if developers began developing for the browser and because it was across these 19-some platforms as I mentioned, it then has the potential that OEM's could put different types of operating systems on their machines because the other programs and applications out in the general market would be able to run on top of the browser and not be particular as to which operating system was installed with the PC." Barksdale, 10/27/98pm, at 4:19 - 5:9; see also Barksdale, 10/27/98am, at 74:10-16 (explaining that if Netscape's browser were successful, it could potentially "marginalize or commoditize the platform characteristics of the operating system beneath it").

iv. Professor Fisher testified: "To the extent that browsers support applications independent of the operating system, they could erode the applications programming barrier to entry that protects Microsoft's monopoly in operating systems." Fisher Dir. ¶ 82; Fisher Dir. ¶¶ 85-86, 90 (collecting internal MS documents; citing GX 354, GX 473, GX 510, GX 1016); Fisher, 1/12/99pm, at 68:20 - 69:2 (explaining that OS and Java threaten to facilitate a substitute's entry).

55. Non-Microsoft browsers posed an especially serious threat because network-based computing in general, and the Internet in particular, quickly blossomed into a very important way users employ their PCs; if Microsoft were unable to control the standards and interfaces that are central to network-based computing, other firms could develop rival platforms using those standards and

interfaces and would be able to challenge the applications barrier to entry.

i. In his May 1995 memo, "The Web is the Next Platform," Microsoft's Ben Slivka wrote that "we should be extending the web with as many Microsoft technologies as possible, even if we have to modify those technologies in ways not original [sic] intended by their designers." He concluded: "If Microsoft doesn't enhance the Web, there is a nightmare scenario where an OS-neutral Web platform arises, and then a company like Matsushita or Siemens could come out with a $500 'Web Box' that runs web applications (with no need for Windows, or MS-DOS compatibility, or Intel compatibility), and consumers make the obvious choice between a $2000 Windows PC and the $500 Web Box. Say good-bye to Windows." GX 21, MS98 0102397.

ii. A June 1996 Microsoft marketing report, "Winning @ Internet Content," states: "The rise of the Internet has been driven by the success of a series of 'platforms' that utilize these protocols at their core and provide a set of APIs for ISVs to develop on top of. By far the most successful platform to date has been Netscape's, with Netscape Navigator on the browser and Netscape Suite Spot on the server. The core threat for Microsoft is the potential for this platform to abstract the Win32 API. For example, if Netscape continues its success in getting ISVs and ICVs to develop applications for Netscape's client/server Api's, these API's could be the most important API's in the future, putting Win32 and Microsoft's platform position in jeopardy." GX 407, at MS6 5005709.

iii. See also infra Part VII.D.

2. Microsoft recognized the threat that Internet browsers, in particular Netscape Navigator, posed to its operating system monopoly

56. Microsoft recognized that Internet browsers not controlled by Microsoft could threaten its monopoly by eroding the applications barrier to entry.

56.1. The contemporaneous documents show that Microsoft's executives recognized the browser threat and developed their business strategy to respond to it.

i. In a May 26, 1995, memo entitled "The Internet Tidal Wave," Gates announced to the rest of Microsoft that he assigns "the Internet the highest level of importance. In this memo I want to make clear that our focus on the Internet is critical to every part of our business. The Internet is the most important single development to come along since the IBM PC was introduced in 1981. It is

even more important than the arrival of the graphical user interface (GUI)." Gates identified "a new competitor 'born' on the Internet" -- Netscape. "Their browser is dominant, with 70% usage share, allowing them to determine which network extensions will catch on. The are pursuing a multi-platform strategy where they move the key API into the client to commoditize the underlying operating system." GX 20, at MS98 0112876; see also GX 16; GX 17; GX 336, at MS7 007443; Gates, 1/13/99, at 460:15 - 461:10, 407:9-18 (Gates stated that Netscape was "creating a product that would either reduce the value or eliminate demand for the Windows operating system if they continued to improve it and we didn't keep improving our product.")

ii. McGeady described what Microsoft executives, including Mr. Gates, told Intel about its view of Netscape in 1995: "If you begin to get a few leading-edge application developers that are developing for the Netscape environment, then that makes that environment that much more attractive both for end users and for other applications developers. And so more applications developers come to up [sic] which brings more users to it and more application developers, that's the positive feedback loop. That's what he wanted to prevent happening, that kind of a feedback loop which everyone seeks in this industry . . . If independent software developers began to write applications or plug-ins that worked directly with the browser, then, first of all, they may not--they may no longer write them to work directly with Windows, but more importantly, then Netscape begins to be the one who is setting--who is defining those application programming interfaces we discussed earlier, and Netscape then is much more in control of the rate of innovation and the kinds of innovations that happen for those applications, and Microsoft is, correspondingly, less in control." McGeady, 11/9/98pm, at 59:22 - 60:11; see also McGeady, 11/9/98pm, 57:10 - 58:8; GX 279, at MS CID 00077 (Notes of an August 2, 1995 meeting with Mr. Gates).

iii. Maritz wrote in May 1995 to other senior Microsoft executives that "we all agree . . . that the Internet represents a big threat/opportunity to our current businesses" and that "Priority #1 is to not lose control of key interfaces and protocols that applications/titles use. O'Hare needs to evolve into an extensible client that encourages 'online applications' to take full advantage of Windows and other MS assets." GX 148. Maritz, 1/28/99am, at 56:20 - 57:1 (Maritz explaining that Navigator is a threat to Windows "if more and more application programs get their services from Navigator and not from Windows, the perceived value of Windows is

going to decline, and the ability to have those applications moved to other platforms will also be increased"); see also GX

503, at MS6 6008248.

iv. In his May 1995 memo, “The Web is the Next Platform,” Ben Slivka wrote that “The Web is an application platform (complete with APIs, data formats, and protocols) that threatens Windows -- many corporate developers and ISVs could develop and deliver their solutions more quickly, to a wider audience, with the Web than they can with Windows or MSN as it exists today.” GX 21, at MS98 0102395; see also GX 329; GX 399, at MS98 0103343 (Ben Slivka wrote: “The Web could make Windows irrelevant in the next few years.”); GX 521, at MS98 0103337; Slivka Dep., 1/13/99, at 724:1-8 (Slivka testified: “You know, whether it was Navigator 1 or Navigator 2 or Navigator 3, the point was not that that thing as it stood then would immediately kill Windows. . . . The point was that that thing could grow and blossom and provide an application development platform which was more popular than Windows.”).

v. Brad Chase described in an April 1996 planning memo how Microsoft would lose “the Internet platform battle” if it did not increase consumer usage of Internet Explorer: “The industry would simply ignore our standards. Few would write Windows apps without the Windows user base. . . .” GX 39, at MS6 5005720. He goes on to say that, “Netscape is already entrenched in our markets all over the world. The situation today is scary." GX 39, at MS6 5005724 (emphasis in original); see also GX 510, MS7 004127 (Chase warned that competing Internet browsers could eventually “obsolete Windows"); GX 59 (Chase observed in April 1997 that “IE share is critical. Without it, we lose the desktop, which translates to Windows and Office revenue over time.”); GX 828, MS98 0118367 (In March 1998, Chase notes:

(sealed); GX 40, at MS6 6005550 (Silverberg writes: “Our competitors are trying to create an alternative platform to Windows.”); GX 407, at MS6 5005716; GX 475.

vi. In a May 1997 Internet Explorer 5 Planning document, Chris Jones analyzed Netscape’s approach as follows: “Netscape Communicator defines a new platform, taking advantage of the lessons learned from Visual Basic, Visual C++, Java and Web content. They are completely focused on turning their applications framework (HTML, object model, scripting, and JFC) into the primary way developers deliver Internet-centric applications.” GX 494, at MS7 004614. Mr. Jones also testified that "as soon as the internet came around . . . it was clear that you could take and create something that extended and enhanced what was on the internet and a set of services that are HTML

and create an alternate environment that wouldn't need Windows anymore, that would abstract away all the value that Windows provided and make it just a general purpose--to quote a Netscape vice-president--partially debugged device drivers. And boy, you know, I'm not in the business of shipping partially debugged device drivers." Jones Dep., 1/13/99, at 574:24 - 575:22, 578:2-14 ("If you mean did we think that the Netscape browser was a platform threat, the answer to that question is yes because the services that it provided were compelling alternatives to the services on Windows.").

vii. Microsoft's Yusuf Mehdi agrees that "having users use our software . . . is an important goal for us to defend the Windows market share and provide a platform for those developers to write to. And to the extent at that Netscape would have a more popular platform that people wrote to and used instead, that would be a threat to the business for the Windows business for Microsoft." Mehdi Dep., 1/13/99, at 637:14 - 638:22.

viii. As Dr. Warren-Boulton summarized: "Microsoft clearly regarded Netscape, particularly initially, as a direct threat to its operating system in the sense that Netscape might, in fact become . . . a complete and direct competitor." Warren-Boulton, 12/1/98am, at 42:14-20; see also Warren-Boulton Dir. ¶ 87 (collecting quotes from Microsoft personnel, citing GXs 20, 39-40, 503, 510).

ix. In a presentation for Microsoft's Internet Platform and Tools Division, under the heading "The Internet Battle" Brad Silverberg wrote, "This is not about browsers Our competitors are trying to create an alternative platform to Windows They are smart, aggressive, and have a big lead." GX 517 at MS6 6008635 (emphasis in original).

x. In a presentation for the Microsoft Platform Group entitled "Opportunities & Challenges for FY'97," Paul Maritz described Netscape as "The first 'middleware' layer to have end-user momentum." GX 490 at MS6 6008775.

56.2. At trial, Microsoft's witnesses acknowledged that Netscape Navigator posed a competitive threat to Windows because it provided an application platform that threatened to erode the applications barrier to entry.

i. Dean Schmalensee testified that “Netscape apparently envisioned pursuing a middle ware strategy to compete with Windows. Netscape Navigator relied on APIs in Windows and in that sense was an application. In addition to expanding its features, Netscape promoted its client products as ‘platforms,’ and encouraged ISVs to write to them by providing APIs and other ‘hooks,’ and offered services and software tools . . .” Schmalensee Dir. ¶ 137; Schmalensee, 1/13/99pm, at 33:21 - 34:5 (agreeing Netscape and Java are threats to Microsoft because applications written to those platforms “can be run cross-platform”); Schmalensee, 1/13/99pm, at 35:5-14 ; Schmalensee, 6/21/99am, at 23:10-19 (“I believe that Netscape was a potential platform competitor, and Java was certainly by -- was and is, by any definition, an actual platform competitor.”).

ii. Allchin agreed that Netscape's browser posed a platform threat to Windows. Allchin, 2/1/99pm, at 55:22; Allchin, 2/1/99pm, at 60:23-25 (conceding that the "web application platform" was a threat to Windows and that integrating the browser into Windows was a response to that threat); Allchin, 2/1/99pm, at 60:3-4 ("they were a platform competitor, absolutely"); Allchin, 2/3/99pm, at 8:20-22 (discussing GX 47: "by this time it was obvious to me that Netscape was certainly adding enough APIs, that that was the competitor to Windows."); Allchin, 2/3/99pm, at 9:1-8, 10:9-15, 28:12-15.

iii. Maritz stated that he considered Netscape both an actual platform competitor, “in terms of how people could structure applications,” and a “potential” platform competitor. Maritz, 1/26/99am, at 28:13-23; Maritz, 1/26/99am, at 30:4-6 (Microsoft’s “initial concerns about Netscape focused on their ability to expose API’s and their ability to expose new facilities to web pages.”); Maritz, 1/25/99pm, at 26:20 - 27:19 (“During the first half of the calendar year 1995,” Microsoft came to believe that “Netscape was becoming a platform . . . that other software could depend upon, and they were extending it’s capability as a platform. And one of the natures of a software platform is that it exists to enable other software and if the other software is depending upon your competitor’s platform, even if it’s running on top of your own platform, over time the value of the platform can become diminished . . . .”).